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(71) Applicant(s)

AEG Mobile Communication GmbH

(Incorporated in the Federal Republic of Germany)

Wilhelm-Runge-Strasse 11, D-89081 Ulm/Donau,
Federal Republic of Germany

(72) Inventor(s)

Hans-Georg Preuth

Werner Nettemann

Heino Liekefett

Stefan Bischof

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(74) Agent and/or Address for Service

Stevens, Hewlett & Perkins

1 Serjeant's Inn, Fleet Street, LONDON, EC4Y 1LL,
United Kingdom

(54) Holder for a mobile telephone

(57) The holder unit has a cartridge 2 is pivotally mounted on a support 1 and is provided with a gripping means (29, fig. 1) for optionally gripping a plug-in electric connector 9. By operating a release button 11 the cartridge 2 is swung into a raised position in which the telephone H is released from securing holding means 16, 17 and can be removed from the holder unit. The cartridge 2 has a touch actuator 44 whereby the gripping means clamping the connector 9 can be released so that the telephone H is detached from the connector (9) when removed from the holder unit. The holder unit has means for returning the gripping means to its releasing position when the telephone H is reinserted in the holder unit id the cartridge 2 is then swivelled into the securing position.

Thus the telephone may be removed from the holder either with or without the cable associated with the connector.

FIG. 2

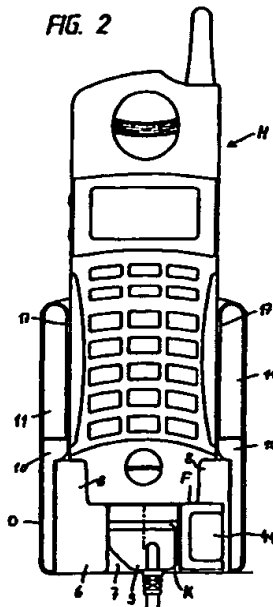
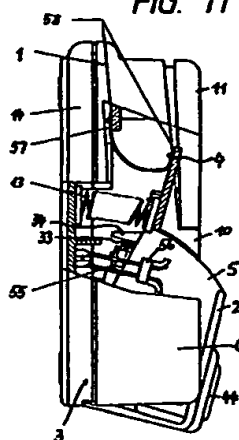


FIG. 11



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1990.

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FIG. 1

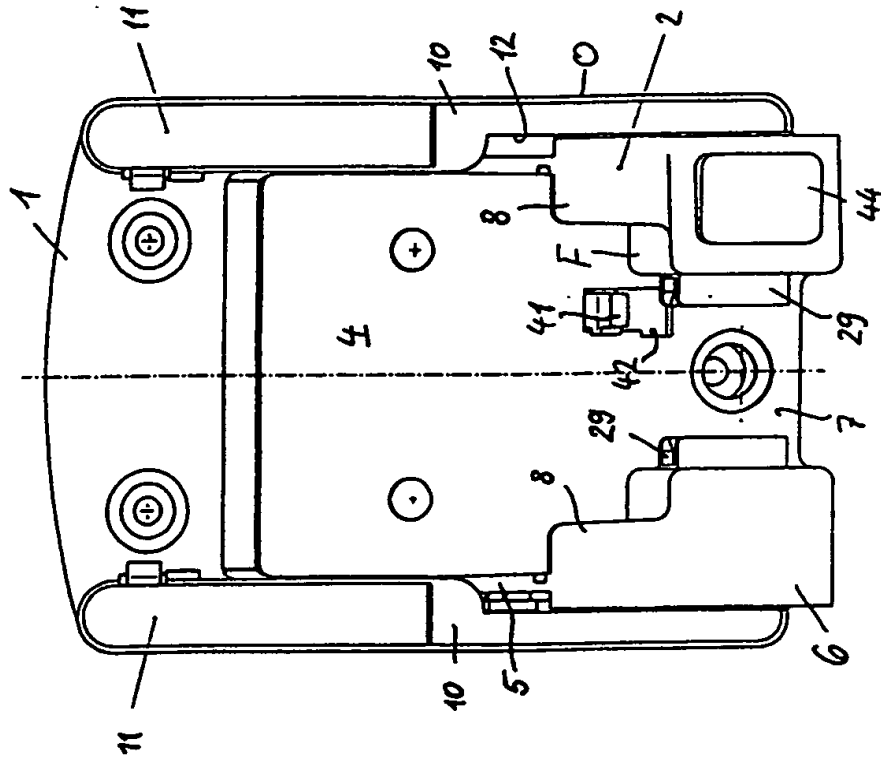


FIG. 11

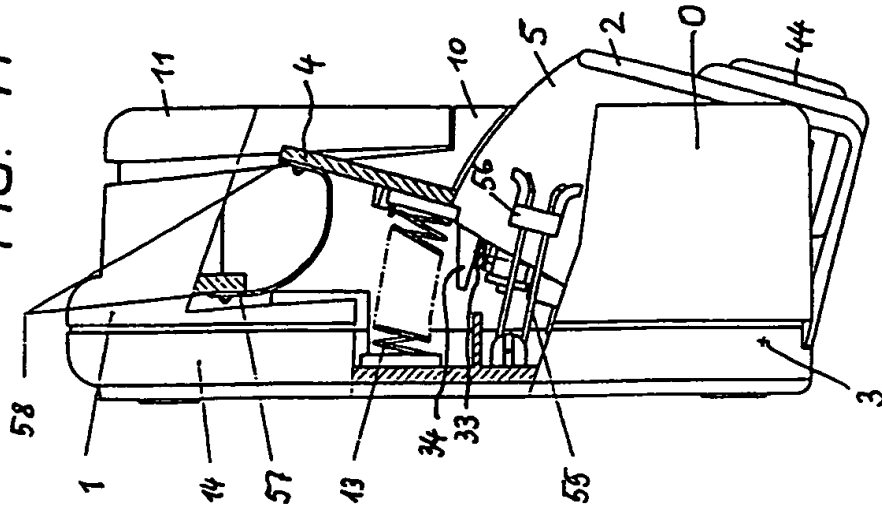
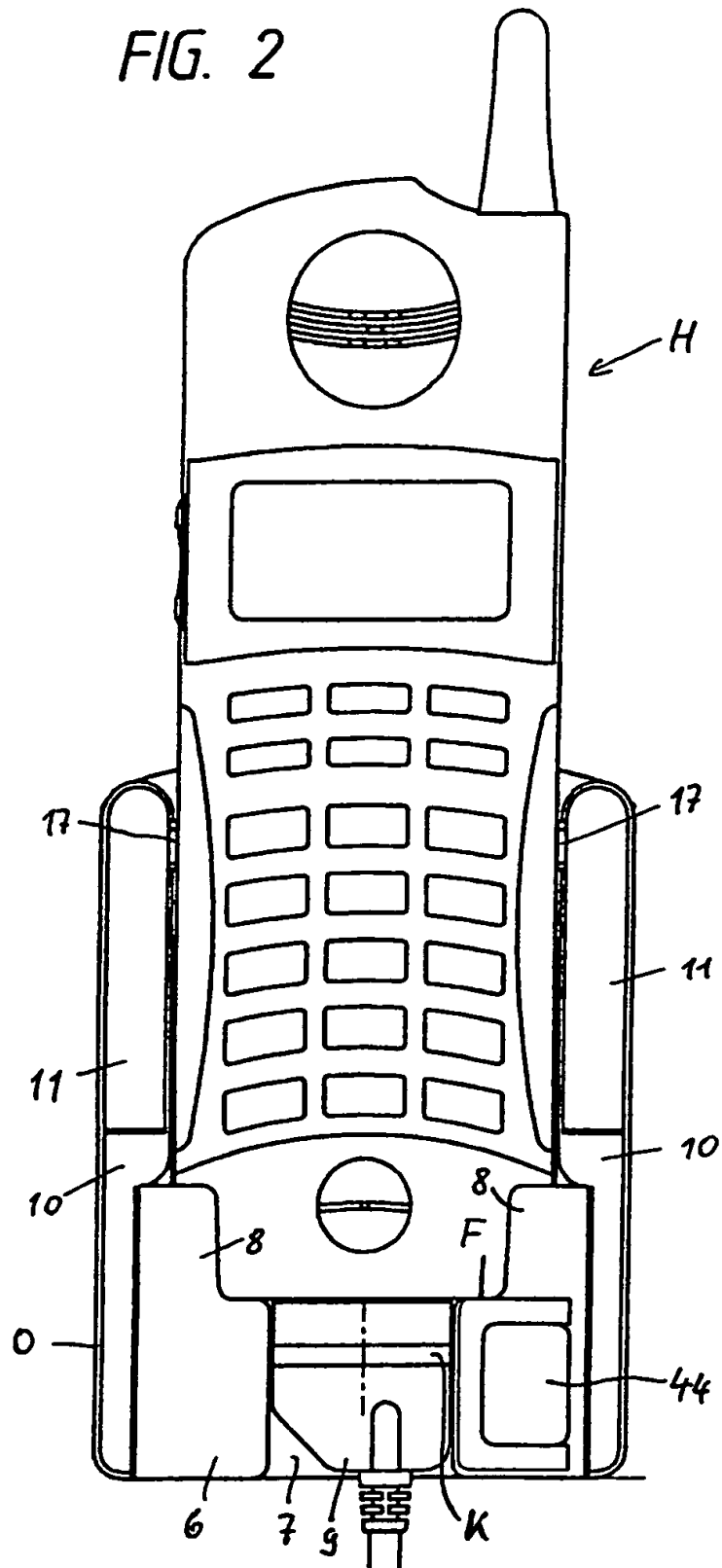


FIG. 2



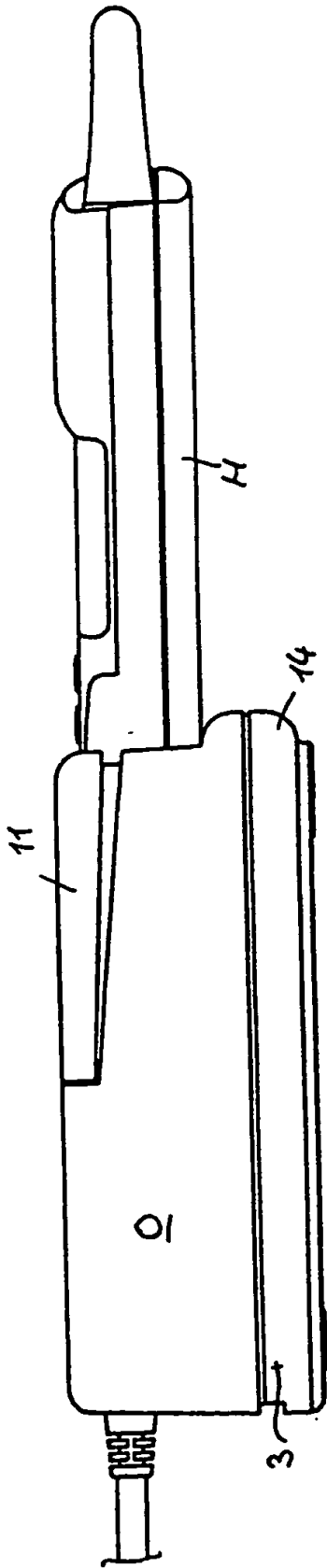


FIG. 3

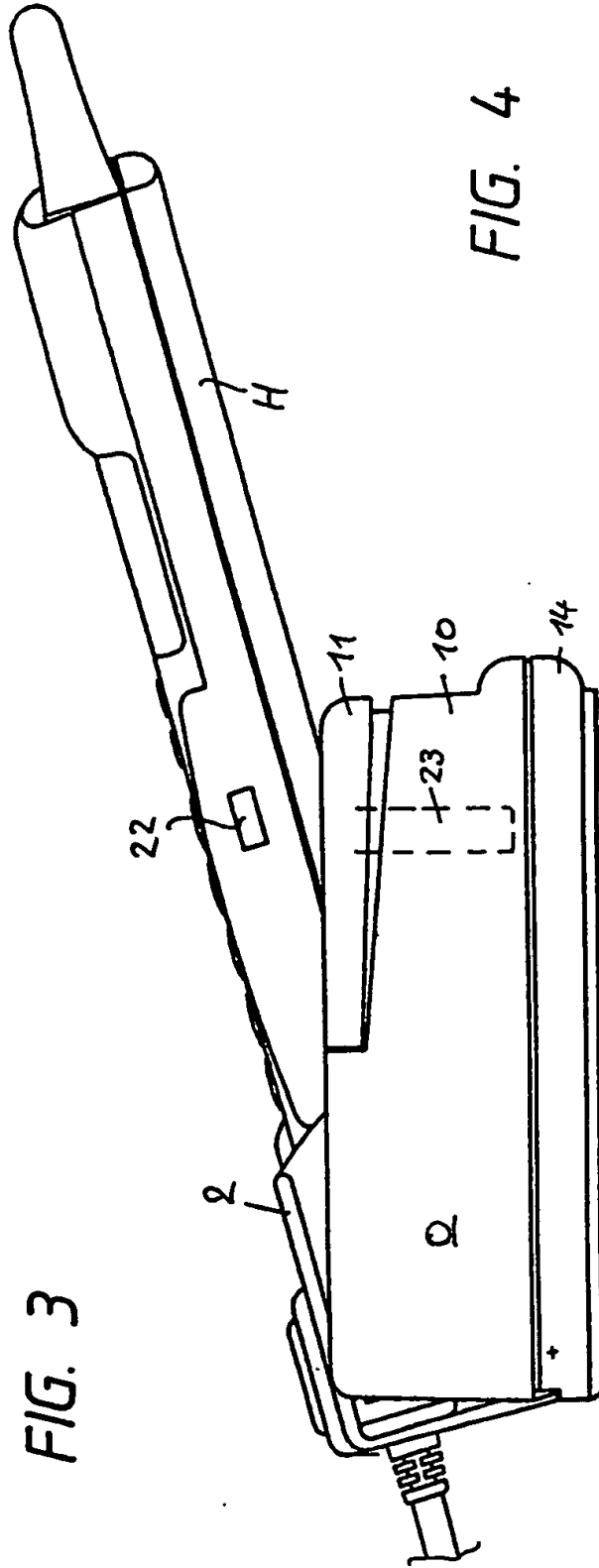
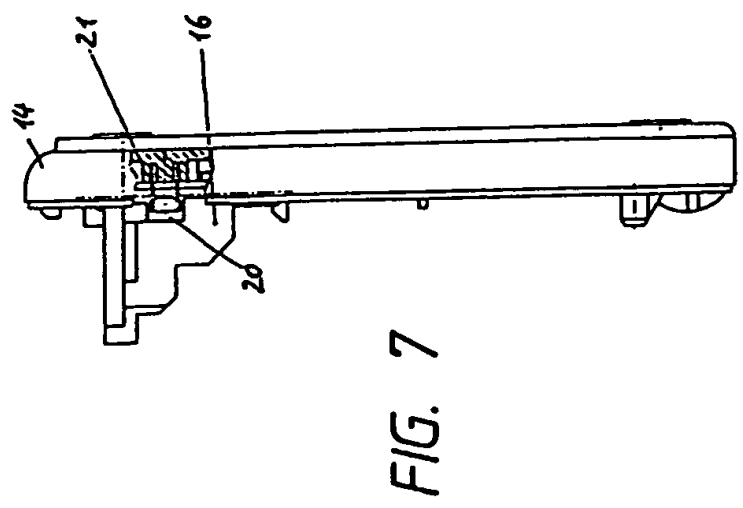
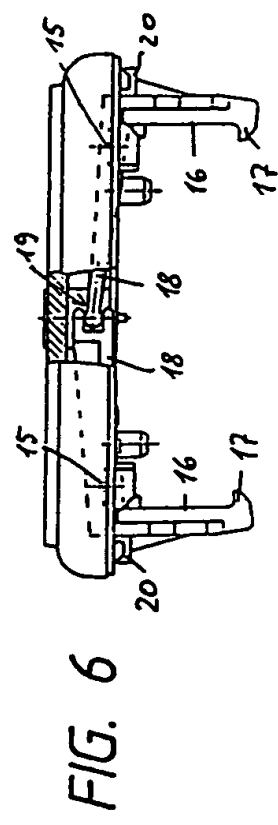
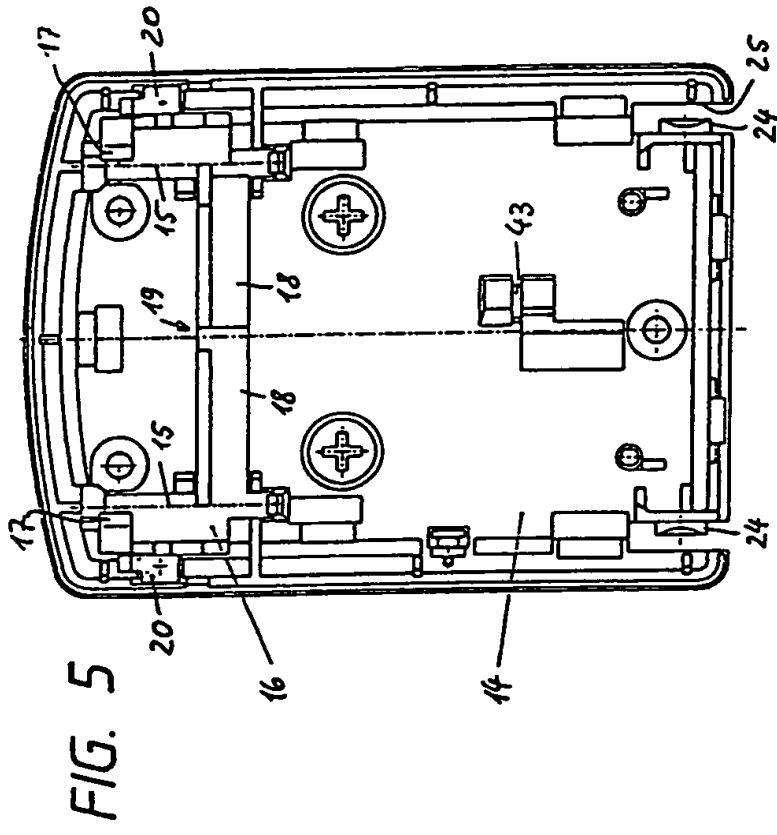


FIG. 4



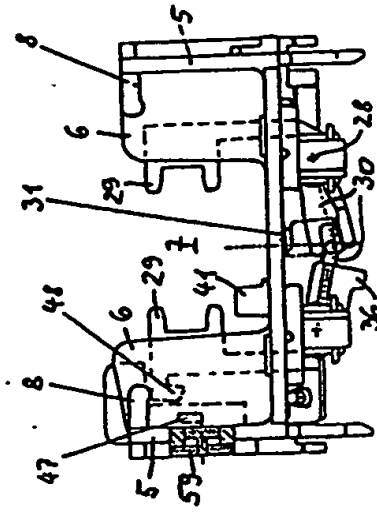
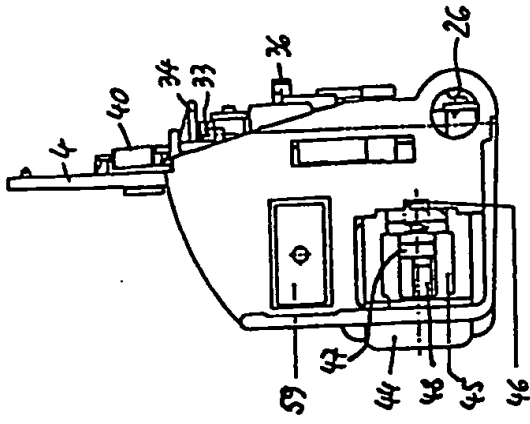
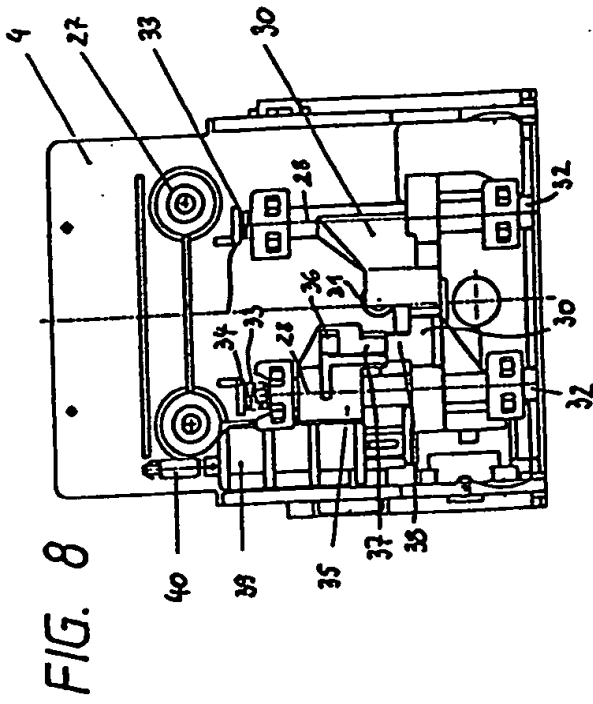


FIG. 12a

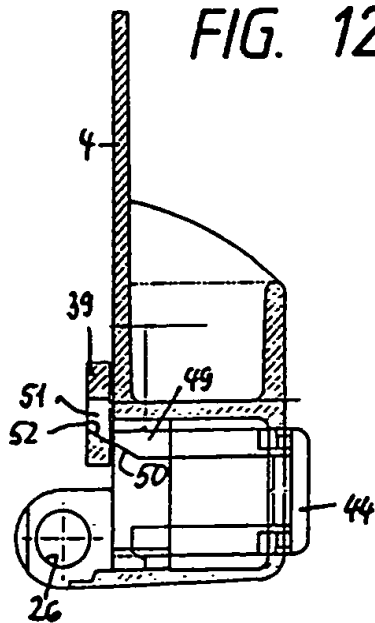


FIG. 12b

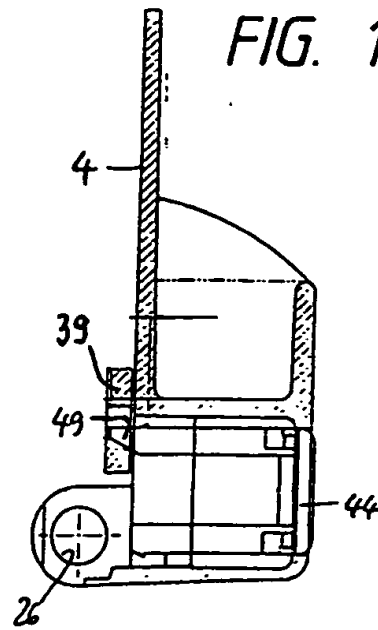


FIG. 13a

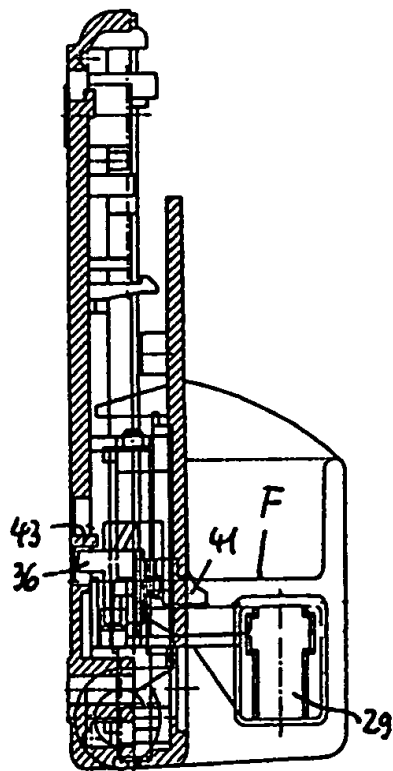


FIG. 13b

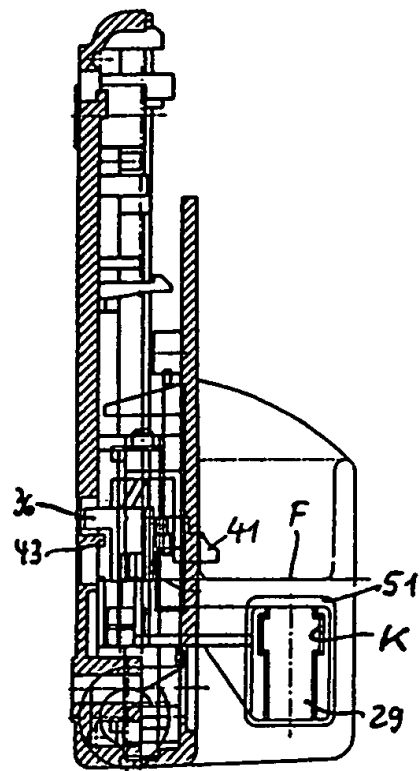


FIG. 14c

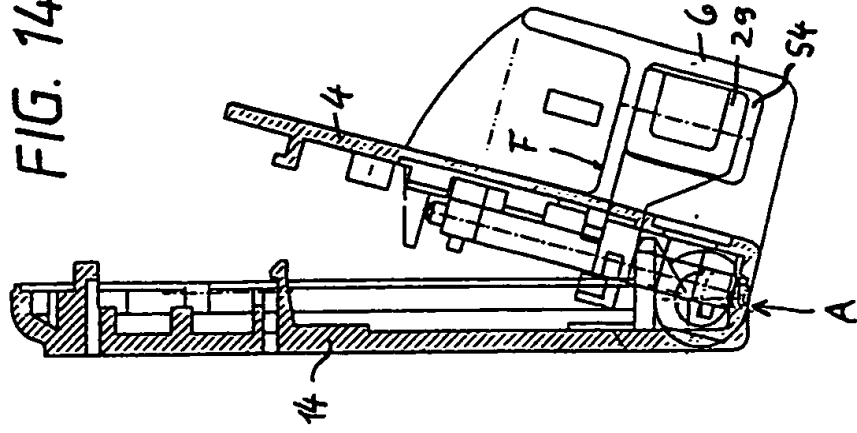


FIG. 14b

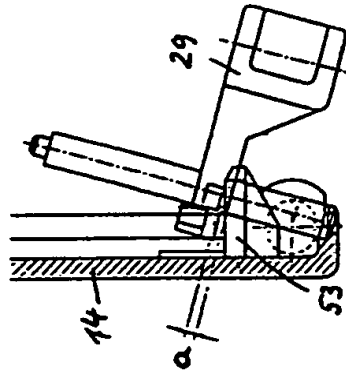
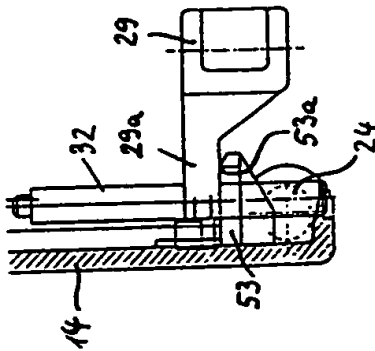


FIG. 14a



"HOLDER UNIT FOR A HAND-HELD MOBILE TELEPHONE

The invention relates to a holder unit for a hand-held mobile telephone.

Hand-held mobile telephones are known in the trade as "mobile phones", and this expression will be used here for simplicity; they have recently gained acceptance by a wider and wider public. They are light, mains-independent devices with low transmitter power, which are used as terminals in cellular digital radiotelephone networks.

The holder unit which is the subject of this application is intended particularly for use in motor vehicles, where the mobile phone must be securely supported and held by the holder unit, generally on the central support between the driver's seat and the passenger seat, but where it must be readily accessible.

It is beneficial for the mobile phone to be connected to an aerial mounted on the vehicle for telephoning in or from the vehicle. This makes the radio connection to and from the phone more reliable. In order to save the batteries contained in the mobile phone it is desirable for the phone to be capable of connection to the vehicle's electrical network when operated in the vehicle. Mobile phones are therefore provided with a socket at their lower end near the microphone capsule, into which an appropriate multiple plug can be inserted, possibly also containing an aerial contact.

The problem underlying the invention is to provide a holder unit in which the mobile phone is securely supported, in which it can be coupled to a plug-in electric connector, and from which it can easily be removed and can also optionally be easily separated from the connector if the mobile phone is to be taken away from the place where the holder unit is installed, as is necessary e.g. if the person is leaving the vehicle but still wishes to be contactable by telephone.

This problem is solved by the features of claim 1. Advantageous embodiments of the invention are the subject of the sub-claims.

The invention provides a holder unit in which the mobile phone is held so securely that it will not be released from the unit even if the vehicle fitted with the mobile phone and holder unit is in a collision. On the other hand, even if space is very confined, as it is between the front seats of a private car, the holder unit gives unimpeded access to the mobile phone and allows it to be picked up easily and taken out of the unit. If necessary the phone may also be released from the plug-in electric connector, although it will automatically be re-coupled to this when re-inserted in the holder unit.

Owing to the fact that the cartridge which forms part of the holder unit is pivotally mounted on the holder unit, the mobile phone can readily be removed even when space is very confined, for

example by a gear stick of a vehicle. Since buttons to release the phone are located at the front or top of the holder unit, unimpeded access to the phone is possible even when there is little space at the sides.

The invention and its features and advantages will emerge from the following description, which refers to the accompanying drawings. In these:

- Fig. 1** is a plan view of a holder unit with the features of the invention
- Fig. 2** is a plan view of the Fig. 1 holder unit with the mobile phone supported in it and connected to a plug-in electric connector
- Fig. 3** is a side view of the Fig. 2 arrangement
- Fig. 4** is a side view corresponding to Fig. 3 with the cartridge raised
- Fig. 5** is a plan view of the baseplate of the holder unit
- Fig. 6** is an end view of the baseplate, partly in section
- Fig. 7** is a side view of the Fig. 5 baseplate, partly in section
- Fig. 8** is a rear view of the rear plate of the cartridge
- Fig. 9** is an end view of the cartridge
- Fig. 10** is a side view of the cartridge
- Fig. 11** is a side view of the holder unit with the cartridge swung out, partly in section
- Fig. 12a** shows part of the cartridge in section, in the non-operated state of the button for releasing the gripping mechanism for the plug-in electric connector
- Fig. 12b** is a partial view comparable to Fig. 12a, in the operated state of the means for releasing the gripping mechanism for the plug-in electric connector
- Fig. 13a** is a sectional view of part of the holder after the mobile phone has been removed when released from the plug-in electric connector

- Fig. 13b is a sectional view of part of the holder after the mobile phone has been removed, including the plug-in electric connector coupled to it
- Fig. 14a shows part of Fig. 12a with the cartridge not swivelled
- Fig. 14b is an explanatory view to illustrate the effect of displacing the gripping jaws, and
- Fig. 14c shows part of Fig. 13a with the gripping jaws displaced.

The holder unit in Figs 1 and 11 comprises a support 1 and a cartridge 2 to receive a mobile phone, which is pivotally mounted on a swivel bearing 3 (Fig. 11) in an end portion of the support 1.

The cartridge 2 has a rear wall 4 and side walls 5 which end in a bottom casing 6, the casing 6 having an aperture 7 in the centre and forming a supporting surface F at the top for the bottom end of a hand-held mobile phone H. Holding flaps 8 to retain a mobile phone are formed on the side walls 5 in the lower portion near the bottom casing 6.

It will be seen from Fig. 2 that, when the mobile phone H is inserted, its lower corner portions are covered by the holding flaps 8, and it will also be seen from Fig. 2 that the aperture 7 in the bottom casing 6 is provided to receive a plug-in electric connector 9, which is inserted in a multiple socket (not shown) in the bottom of the mobile phone H.

The support 1 comprises a baseplate 14 and an upper part O fixed to it, the upper part having side walls 10 which each have a touch actuator 11 in the upper portion and cut-out pieces in the lower portion to receive the side walls 5 of the cartridge 2.

As will be seen from Figs 3 and 4, the cartridge 2 can be swung between a lowered position, in which it is substantially flush with the side walls 10 of the upper part O of the support, and a raised position in which a person's hand can easily be placed below the mobile phone H. In the raised position the cartridge 2 is pre-tensioned by helical compression springs 13, which are fixed between the rear of the rear plate 4 and the baseplate 14 of the support 1.

Fig. 5 is a plan view of the baseplate 14. Two holding arms 16 are pivotally mounted on it in swivel pins 15, which are only shown diagrammatically, the arms 16 extending substantially vertically upright from the baseplate 14 (cf Figs 6 and 7). Locking hooks 17 are formed at the free ends of the holding arms 16. Guiding arms 18 are formed integrally with the holding arms 16, extend substantially parallel with the baseplate 14 and are movably coupled together by their free

ends at 19. Lugs 20 are formed laterally on each of the holding arms 16, and helical compression springs 21 (Fig. 7) are fixed between their undersides and the baseplate 14; the springs press the holding arms 16 in a direction in which their locking hooks 17 move towards one another to engage in depressions 22 (Fig. 4) in a mobile phone H inserted in the holder unit. Owing to the coupling of the two guiding arms 18 at 19 the holding arms 16 always move together.

The movement of the holding arms 16 against the force of the springs 21 may be brought about by plungers located on the underside of the actuators 11, which are mounted flexibly in the side walls 10 of the upper part O of the support. The plungers are drawn in diagrammatically at 23 in Fig. 4. Thus if only one of the actuators 11 is pressed down, both holding arms 16 will be swung outwards. The locking hooks 17 thereby leave the apertures in the mobile phone H, and the cartridge 2 together with the phone H is lifted by the helical compression springs 13 into the swivelled position shown in Fig. 4, so that the mobile phone H can be picked up very easily. It will also be seen that the large surfaces of the touch actuators 11 enable them to be operated optionally by the ball of the hand or the edge of the hand or both when picking up the mobile phone H.

Two pegs 24 with inclined surfaces, projecting into gaps 25, will be seen in the lower portion of the baseplate 14 in Fig. 5. The pegs 24 form the swivel bearing 3 for the cartridge 2. They are seated in holes 26 formed in the side walls 5 of the cartridge 2 (Fig. 10).

The rear plate 4 of the cartridge 2 is shown from the rear in Fig. 8. Pegs 27 to hold the helical compression springs 13 will be seen in Fig. 8. At the rear of the rear plate 4 two gripping jaws 29 are mounted pivotally in swivel pins shown diagrammatically at 28. The gripping jaws 29 are in the bottom casing 6, which is formed at the front of the rear plate 4 and which has openings 54 at the sides facing towards the aperture 7, through which openings the gripping jaws 29 can pass. Guiding arms 30 are joined rigidly to the gripping jaws 29, extend substantially parallel with the rear plate 4 and are hinged together at their free ends as shown in Fig. 9. A helical compression spring 31 is fixed between one of the guiding arms 30 and the rear of the rear plate 4; it presses the guiding arms 30 backwards and thus presses the gripping jaws 29 into a position close together as represented in Fig. 9.

The jaws 29 have journals 32 extending in the swivel pins 28, and these journals 32 are pressed by helical compression springs 33 into an end position which will here be defined as the lowermost position, see Fig. 8. The springs 33 are supported on stops 34 formed integrally with the rear plate 4.

A first slide 35 is mounted axially displaceably on the left-hand journal 32 in Fig. 8; it has a lug 36 pointing in the opposite direction to the rear plate 4, i.e. backwards towards the baseplate 4 (not

shown in Fig. 8), see also Fig. 10. The first slide 35 further has a coupling section 37 which is in engagement with a coupling section 38 on the left-hand guiding arm 30 in Fig. 7, so that the first slide 35 and the left-hand guiding arm 30 are coupled together so as to preclude relative rotation and can thus only be swivelled jointly. The guiding arms 30 can be swivelled by pressing against the lug 36 against the force of the helical compression spring 31, and the gripping jaws 29 can be moved apart by the arms 30, so that the jaws are swung from the position shown in Fig. 9 into the bottom casing 6.

A second slide 39 is mounted on the rear plate 4, can be displaced parallel with the axial direction of the swivel pins 28, and is pre-tensioned into an uppermost position by a helical tension spring 40 anchored on the rear plate 4. The second slide 39 is coupled to the first slide 35 in such a way that the two slides 35 and 39 can only be displaced jointly in the direction of the pins 28.

A flap 41 is formed on the second slide 39 and projects through an opening 42 in the rear plate 4 into the cavity which is formed by the rear plate 4 and side walls 5 of the cartridge 2 to receive the mobile phone H. The opening 42 is elongated and allows the flap 41 to move upwards and downwards in Fig. 1. The opening 42 is positioned so that when the mobile phone H is inserted in the cartridge 2, i.e. when the bottom of the phone H is placed on the supporting surface F of the bottom casing 6, the flap 41 is moved out of the raised position in Fig. 1 into a central position aligned with the height of the supporting surface F. When the flap 41 is in this central position the lug 36 is at a location directly opposite a web 43 formed on the baseplate 14. There are empty spaces above and below the web 43. The lug 36 and web 43 are dimensioned in respect of their projection so that, when the flap 41 is in said central position and the cartridge 2 is swung into the Fig. 3 position, the lug 36 runs onto the web 43, thereby swinging the gripping jaws 29 into the position in which they are swung into the bottom casing 6, if they are not already in that position.

As shown in Figs 1, 9 and 10 a pushbutton 44 is mounted in the bottom casing 6 of the cartridge so that it can be pressed in, the pushbutton triggering the gripping of the plug-in electric connector 9. A third slide 45 is mounted on the button 44 for displacement in the pressing-in direction of the button; it is pushed forwards, i.e. in the direction moving out of the bottom casing 6, by a helical compression spring 46 supported on the side wall 5 of the cartridge 2, and thus pushes the whole button 44 forwards. A catch 47 is formed on the third slide 45, behind which catch a hook 48 formed on the left-hand gripping jaw 29 in Fig. 9 can engage. When the hook 48 engages behind the catch 47 both gripping jaws 29 are secured in their releasing position, hidden in the bottom casing 6.

Referring to Fig. 12a, a pin 49 with an oblique flank 50 is formed on the button 44. The pin extends towards the rear and its end is opposite the second slide 39; the slide 39 contains an opening 51 which in the example illustrated has an oblique flank 52 congruent with the oblique

flank 50. In Fig. 12a the second slide 39, which is only partly shown, is in a position corresponding to the central position of the flap 41, obtained when a mobile phone is inserted in the cartridge 2 and pushes the flap 41 into the position of alignment with the supporting surface F of the bottom casing 6. When the slide 39 is in this position the opening 51 is opposite the pin 49, so that the button 44 can be pressed in against the force of the spring 46 (Fig. 10); the pin 49 moves into the opening 51, and the oblique flank 50 on the pin 49 causes the second slide 39 to be pulled into a lowermost position against the force of the helical tension spring 40 (Fig. 8). This position is illustrated in Fig. 12b. The result of this step is that the lug 36 is pulled down from the web 43, so that the lug 36 can move into a clear space formed below the web 43, and the guiding arms 30 can swing backwards under the force of the helical compression spring 31 (Fig. 9) and swing the gripping-jaws 29 out of the bottom casing 6 to be applied laterally to a plug-in electric connector 9 inserted in the mobile phone H. This position of the lug 36 is shown in Fig. 13a.

If the mobile phone H is then removed from the holder unit - for which purpose at least one of the touch actuators 11 is operated - and the cartridge 2 then swings into the Fig. 4 position, the helical tension spring 40 pulls the second slide 36 and with it the first slide 35 into the uppermost position shown in Fig. 8. The flap 41 then has a vertical position higher than the supporting surface F of the bottom casing 6. In this position, i.e. without a mobile phone being inserted in the cartridge 2, if the cartridge 2 is swung into the support 1 into the Fig. 13b position, the lug 36 will move into a clear space above the web 43, i.e. the lug 36 and web 43 will not meet, so the guiding arms 30 will not be swung into the releasing position and the gripping jaws 29 will stay in their position close together, gripping the plug-in electric connector 9.

In summarising it can thus be said that the gripping jaws 29 can be swung out of their gripping position into a releasing position only when a mobile phone is inserted in the holder unit and the cartridge 2 is swung down into the phone-securing position (Fig. 3).

As a means of holding the connector 9 securely on the mobile phone H when the phone is used removed from the holder unit, the connector 9 is usually provided with resilient locking hooks (not shown) which splay outwards, engaging in a recess in the aperture receiving the connector at the bottom of the phone H. This locking position, which can be released by pressing against the connector 9 from the side, is reached only when the connector 9 is inserted tightly, i.e. completely in the receiving aperture provided for the purpose at the lower end of the phone. The connector 9 must in fact be seated tightly on the phone H in order to avoid loose contacts. Such a tight seat, with the engaging lugs of the connector 9 securely locked to the mobile phone H, with even slight play for the connector 9 when it is gripped by the jaws 29, cannot be obtained if the connector 9 assumes the Fig. 2 position and the mobile phone H is inserted in the cartridge 2. Instead, the connector 9 has to be raised a certain distance above the supporting surface F for the phone H on the bottom casing 6. When the phone H is in the secured state, however, any mechanical

overloading of the connector 9 must be avoided, since otherwise the plate in the phone H, to which the socket coupled to the connector is soldered, may easily be damaged. That is to say, when the phone H has successfully been coupled to the connector 9 and the cartridge 2 is swung down into the upper part O of the support unit, the connector 9 must be pulled back again, i.e. lowered into the space 7. Advantageous measures for achieving this aim can be seen from Figs 14a to 14c.

Fig. 14a shows part of Fig. 13a. The baseplate 14 of the holder unit 1 and a gripping jaw 29 with its spindle 32 will be recognised. The swivel bearing about which the cartridge 2 can be swung relative to the baseplate 14 is referred to as 24. The jaw 29 has an arm 29a lying on a bracket 53 which is formed on the baseplate 14 and protrudes perpendicularly therefrom. The jaw 29 is held in this position by the helical compression spring 33, not shown in Fig. 14a (see Fig. 10). Without this bracket 53 the jaw 29 would assume the Fig. 14b position when the cartridge 2 was swung out of the holder unit. But by virtue of the presence and shape of the bracket 53 the jaw 29 is raised a distance a when the cartridge 2 is swung in, since the arm 29a of the jaw 29 slides over the free edge 53a of the bracket 53. This position is illustrated in Fig. 14c. It will be seen from Fig. 14c that the jaw 29 is lifted upwards in the opening 54 in the wall of the bottom casing 6 facing towards the space 7, compared to the position in Fig. 13b, so that the top edge of the jaw 29 lies against the upper edge of the opening 54, whereas in the Fig. 13b position there is still a gap there. In this raised position the connector 9 held by the gripping jaws 29 projects from the supporting surface F on the bottom casing 6 far enough for the mobile phone H to be securely coupled to the connector 9 and for the connector to be locked to the phone H. In order to prevent the connector 9 from being pressed downwards when the phone H is coupled to it, the connector 9 and jaws 29 are provided with an appropriate matching profile K, which ensures positive securing of the connector 9 in the jaws 29.

In order to suppress and limit the swinging movement of the cartridge 2 under the force of the helical compression springs 13, a bracing spring 55 is provided as shown in Fig. 11; it is anchored to the baseplate 14 of the holder 1, and its limbs extend through a guiding and stopping eyelet 56 formed on one side wall 5 of the cartridge 2. The bracing spring is approximately V-shaped when relaxed and is stretched into a U shape, as illustrated, when the cartridge 2 is swung out. The ends of the limbs of the spring 55 may be bent upwards, as illustrated, to limit the swinging-out movement of the cartridge. The resilient bracing force of the spring 55, interacting with the guiding and stopping eyelet 56, generates a force counteracting that of the springs 17; as the cartridge 2 swings out increasingly this force becomes weaker the more the V shape of the bracing spring changes to a U shape. The total spring force effective at the cartridge 2 can thereby be kept approximately constant over the whole swinging path of the cartridge. Movement is additionally suppressed by friction at the guiding and stopping eyelet 56.

The swivelling angle may also be limited by suitable shaping of the rear plate 4 and baseplate 14 in the vicinity of the joint 3, through having the lower edge of the rear plate 14 running up onto an opposing lower edge on the baseplate at the end of the swinging out movement of the cartridge 2; see "A" in Fig. 14c.

The gap formed between the rear plate 4 of the cartridge 2 and the upper part O of the support when the cartridge is swung out is closed by an appropriate flexible cover 57 which may, for example, be a piece of plastic film or textile material with its ends stuck to the exposed top edge of the rear plate 4 and upper part O of the support 1 at 58. The gap between the rear plate 4 and the baseplate 14 of the support 1 is thereby protected from improper handling and entry of foreign bodies.

It should finally be mentioned that a permanent magnet 29 may advantageously be embedded in the cartridge 2 at a suitable place for the mobile phone H, for example in a side wall 5, to produce switch-over functions in the phone H, for example switching over from current supply and aerial connection to the plug-in connector 9 when the phone H is inserted in the holder unit.

To summarise, the properties of the holder unit according to the invention may be described as follows:

When the mobile phone is inserted in the holder unit as shown in Figs 2 and 3, the phone H is held securely by the locking hooks 17 formed on the holding arms 16 which are mounted on the baseplate 14 of the support 1. Accelerating forces which may act on the phone H, for example in the event of a collision, are effectively diverted from the arms 16 to the baseplate 14.

A person who wishes to remove the mobile phone from the holder unit and reaches out towards it for that purpose can simultaneously press down one of the touch actuators 11 (or both, optionally) with the ball of the hand or the edge of the hand or both, thereby swinging both holding arms 16 outwards and releasing the locking hooks 17 from engagement with the depressions 22 in the phone H. The cartridge 2 containing the phone H swings upwards by the force of the helical compression springs 13. The phone H can now be taken out of the holder unit.

If a person wishes to release the phone from the holder unit without the cable, he presses the release button 44. The first slide 35 is thereby drawn down over the second slide 39 by means of the pin 49, the lug 36 leaves the web 43, and the gripping jaws 29 swing inwards towards the space 7 by the force of the helical compression spring 31 and hold the plug-in connector 9 fast. By pressing down one of the actuators 11 as previously described the person can now trigger the swinging up of the cartridge 2 with the phone H and can conveniently take hold of the phone, take it out of the holder unit and pull it off the connector 9. The aforementioned locking hooks which

secure the connector 9 to the phone H are pressed inwards by the gripping jaws 29, so that they do not impede removal of the phone H from the connector 9.

Alternatively the cartridge 2 may be swung upwards first and the release button 44 only operated at that stage to produce the same result, for the bottom of the phone H still presses onto the flap 41 and thus holds the second slide 39 in a position with its opening 51 opposite the pin 49, so that the release button 44 is not blocked and can be pressed in.

When the phone is removed from the holder unit the first slide 35 assumes the position shown in Figs 8 and 13b, with the flap 41 raised above the central position. If the cartridge 2 is pressed down in this state through incorrect operation (e.g. by children playing), the lug 36 will not meet the web 43, so the gripping jaws 29 cannot be moved into the releasing position.

If the phone is removed from the holder unit together with the connector 9 the second slide 39 will be in the raised position shown in Fig. 8. It adopts a vertical position in which its aperture 51 (Fig. 12a) is not opposite the pin 49 on the release button 44 and thus blocks any movement of the button 44. The button cannot be pressed in, so with the holder unit in this state it is not possible to move the gripping jaws 29 into the position close together, as shown in Fig. 1, in which they could prevent the phone with the connector attached to it from being inserted in the holder unit. The holder unit is thus secured against incorrect operation in every state.

CLAIMS

1. A holder unit for a hand-held mobile telephone comprising a support and a cartridge, one end of which
5 is mounted pivotally at one end of the support in such a way that it can be swivelled from a lowered holding position to a raised releasing position, a pivotable holding means being arranged on the support and adapted to be brought into positive engagement with a
10 hand-held mobile telephone, a manually operable release means being arranged on the support to free the holding means, and the cartridge being provided with a gripping means for clamping an electric connector plugged into a hand-held mobile telephone
15 and having a release means to release the gripping means in order to clamp the connector.

2. A holder unit according to claim 1, characterised in that the support has a baseplate on which two spaced-apart holding arms are mounted
20 flexibly, the arms standing upright from the baseplate, being provided with locking hooks and being under the influence of a spring force which pre-tensions the hooks in a direction moving towards each other.

25 3. A holder unit according to claim 2, characterised in that the holding arms are provided with guiding arms formed rigidly on them, the guiding arms extending substantially parallel with the baseplate and being flexibly coupled together at their
30 free ends.

4. A holder unit according to claim 2, characterised in that the holding arms have lateral lugs in their joint portion, between each of which lugs and the baseplate a helical compression spring is
35 fixed and on each of which lugs a plunger lies, and an upper part is fixed on the baseplate, forming a cavity

to receive a hand-held mobile telephone, the cavity being bounded on two sides by walls, the ends of which are at least partly formed by touch actuators which butt the plungers or are joined to them.

5 5. A holder unit according to any of the preceding claims, characterised in that the cartridge is formed by a rear plate, two side walls with holding flaps extending parallel with the rear plate, and a bottom casing with an aperture in the centre, gripping
10 jaws are arranged in the bottom casing on both sides of the aperture, the jaws passing through openings in the casing facing towards the aperture, being mounted flexibly on the rear plate and having guiding arms
15 which extend substantially parallel with the back of the rear plate and the free ends of which are coupled flexibly together, and the gripping jaws are pre-tensioned by spring force in a direction moving them closer together, and one of the jaws is provided with
20 a locking hook which, in an end position of the jaws in which they are swivelled substantially into the bottom casing, is locked to a release button which frees the hook when operated.

6. A holder unit according to claim 5, characterised in that at the back of the rear plate
25 one of the gripping jaws is coupled to a first slide, which has a lug projecting towards the baseplate and which can be swivelled together with the jaw and displaced along the swivel pin of the jaw, the first
30 slide is coupled to a second slide which is displaceable with it and which has a flap passing through an opening in the rear plate, the slide lying against the lower end of the telephone when the telephone is inserted in the holder unit and being moved by the
35 telephone to a central position in which the lug is opposite a projecting web formed on the baseplate, and the second slide is under the influence of a spring

force which pre-tensions the second slide in the opposite direction to that in which the telephone is inserted in the cartridge, and an opening is formed in the second slide and in the central position of the slide is opposite a pin formed on the release button, which pin has an oblique flank and can be inserted in the opening on operation of the release button, the pin moving the second slide against a spring force together with the first slide and moving the lug relative to the web to allow the jaws to be swivelled into the gripping position.

7. A holder unit according to claims 5 or 6, characterised in that the release button is under the influence of a restoring spring.

8. A holder unit according to claim 6, characterised in that the opening in the second slide has an oblique flank matching the oblique flank of the pin.

9. A holder unit according to any of the preceding claims, characterised in that the gripping jaws are displaceable in the axial direction of their swivel pins against the force of springs acting in the direction in which the telephone is inserted in the cartridge, and that the jaws are formed on arms which rest on brackets when the cartridge is swivelled into the upper part, which brackets stand substantially vertically upright from the baseplate of the support, their ends pressing against the gripping jaw arms when the cartridge is swung into the raised position and moving the jaws towards the telephone.

10. A holder unit according to any of the preceding claims, characterised in that the gripping jaws have a profile which congruently matches the profile of the plug-in electric connector.

11. A holder unit according to any of the preceding claims, characterised in that a spring means

for pre-tensioning the cartridge into the raised position is arranged between the baseplate and the rear plate.

12. A holder unit according to claim 11,
5 characterised in that a braking means for suppressing and limiting the swivelling movement of the cartridge is arranged between the baseplate and the cartridge.

13. A holder unit according to any of the
10 preceding claims, characterised in that a flexible cover fixed to the back of the rear plate and the upper part is arranged between the rear plate and the upper part.

14. A holder unit according to claim 13,
15 characterised in that the cover is a piece of textile material.

15. A holder unit according to claim 4 or any of its appended claims, characterised in that the side walls of the upper part contain recesses for the side walls and the bottom casing of the cartridge.

20 16. A holder unit according to any of the preceding claims, characterised in that a permanent magnet is embedded in at least one side wall of the cartridge with its pole ends facing towards the interior of the cartridge.

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Patents Act 1977
Examiner's report to the Comptroller under Section 17
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Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-
1 to 16

(ii) ONLINE DATABASES: WPI, JAPIO, CLAIMS

Categories of documents

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Category	Identity of document and relevant passages	Relevant to claim(s)
A	EP 0585011 A1 (NEC)	
A	EP 0545670 A2 (NOKIA)	
A	EP 0280061 A2 (DEUTSCHE BUNDESBAHN)	

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